What is claimed is:

1.   A method of routing data packets through a switch fabric, each data packet having a corresponding switch processing parameter (SPP), said method comprising the steps of:

    a)   receiving a plurality of data packets;

    b)   queuing a plurality of data packets into a plurality of data packet queues according to their corresponding SPPs such that data packets sharing a common corresponding SPP are commonly-queued;

    c)   creating train packets from commonly-queued data packets, each train packet comprising a payload and a header, wherein the train packet creating step includes encapsulating a plurality of commonly-queued data packets within the payload of at least one train packet and encapsulating the SPP corresponding to each data packet encapsulated in the train packet payload within the train packet header; and

    d)   routing each train packet through the switch fabric as specified by its encapsulated SPP.

2.   The method of claim 1 wherein the train packet creating step includes the step of creating a train packet from at least some of the data packets in a data packet queue if the data packets queued therein have an aggregate length greater than or equal to a pre-selected maximum threshold value.

3.   The method of claim 1 wherein the train packet creating step includes the step of creating train packets having varying lengths.

4.   The method of claim 1 wherein the train packet creating step includes creating train packets having a fixed length.

5.   The method of claim 1 wherein the train packet creating step includes the step of creating a train packet from whatever is queued in a non-empty data packet queue upon passage of a pre-selected time period after which that data packet queue became non-empty.

6.   The method of claim 1 wherein each train packet payload is comprised of a plurality of payload blocks, and wherein the train packet payload encapsulating step includes encapsulating within each

22928.doc

payload block either a plurality of data packets, a single data
5 packet, a portion of a data packet, padding, or some combination
thereof.

7.   The method of claim 1 further comprising the step of:
      once the train packet has been routed through the switch
fabric, extracting from the train packet each data packet contained
therein.

5 8.   The method of claim 1 further comprising the steps of:
      sorting the data packets into a plurality of distribution
classes according to a predetermined set of distribution criteria;
and
      wherein the queuing step is preformed only upon the data
10 packets sorted into less than all but at least one of said
distribution classes.

9.   The method of claim 1 further comprising the steps of:
      sorting the data packets into a plurality of distribution
classes according to a predetermined set of distribution criteria;
15 and
      wherein the queuing step is performed upon the data packets
sorted into each of said distribution classes.

10.   A method of routing data packets through a switch fabric having
a plurality of switch planes, each data packet having a corresponding
switch processing parameter (SPP), said method comprising the steps
of:

5   a)   receiving a plurality of data packets;
      b)   queuing a plurality of data packets into a plurality of
data packet queues according to their corresponding SPPs such that
data packets sharing a common corresponding SPP are queued within the
same data packet queue;
10   c)   creating train packets from commonly-queued data packets,
each train packet comprising a payload and a header, wherein the
train packet creating step includes encapsulating a plurality of
commonly-queued data packets within the payload of at least one train
packet and encapsulating the common SPP corresponding to each data
15 packet encapsulated in the train packet payload within the train
packet header;

22928.doc

d)   for each train packet, creating a set of N subtrain packets, each subtrain packet comprising a subtrain payload and a subtrain header, wherein the step of creating a subtrain packet set includes creating the subtrain payloads by slicing each train packet payload into N slices, wherein each slice comprises a subtrain payload, and encapsulating within each subtrain header the SPP encapsulated within the train packet header of the train packet from which the set of subtrain packets was sliced;

e)   routing each subtrain packet within a set of subtrain packets through a different switch plane within the switch fabric as specified by its encapsulated SPP.

11.   The method of claim 10 wherein the train packet creating step includes the step of creating a train packet from at least some of the data packets in a data packet queue if the data packets queued therein have an aggregate length greater than or equal to a pre-selected maximum threshold value.

12.   The method of claim 10 wherein the train packet creating step includes the step of creating train packets having varying lengths.

13.   The method of claim 10 wherein the train packet creating step includes creating train packets having a fixed length.

14.   The method of claim 10 wherein the train packet creating step further includes the step of creating a train packet from whatever is queued in a non-empty data packet queue upon passage of a pre-selected time period after which that data packet queue became non-empty.

15.   The method of claim 10 wherein each train packet payload is comprised of a plurality of payload blocks, and wherein the train packet payload encapsulating step includes encapsulating within each payload block either a plurality of data packets, a single data packet, a portion of a data packet, padding, or some combination thereof.

16.   The method of claim 10 further comprising the steps of:

once each subtrain packet within a set of subtrain packets has
been routed through a switch plane, reassembling the train packet
from which that set of subtrain packets was created; and

5   extracting each data packet from the reassembled train packet.

17.   The method of claim 10 further comprising the step of sorting
the data packets into a plurality of distribution classes according
to a predetermined set of distribution criteria, and wherein the
queuing step is preformed only upon the data packets sorted into less
10   than all but at least one of said distribution classes.

18.   The method of claim 10 further comprising the step of sorting
the data packets into a plurality of distribution classes according
to a predetermined set of distribution criteria, and wherein the
queuing step is preformed upon the data packets sorted into each of
15   said distribution classes.

19.   A switch for routing data packets between a plurality of switch
inputs and a plurality of switch outputs, each of said data packets
having a corresponding switch processing parameter (SPP), said switch
comprising:

5   a)   a plurality of packet formatters for queuing together
data packets sharing a common corresponding SPP, creating train
packets from the commonly-queued data packets, and providing the
train packets to a switch fabric, wherein each train packet comprises
a payload and a header, wherein the payload of at least one train
10   packet includes a plurality of commonly-queued data packets, and
wherein the header of each train packet includes the common SPP
corresponding to each data packet included in the payload of that
train packet;

      b)   the switch fabric having a plurality of switch fabric
15   inputs for receiving train packets provided by the packet formatters
and a plurality of switch fabric outputs for outputting routed train
packets, wherein the switch fabric is configured to route each
received train packet to a switch fabric output according to the SPP
included in the header of each train packet; and

20   c)   a plurality of packet deformatters for receiving routed
train packets outputted from the switch fabric, extracting data

packets from the payloads of the received routed train packets, and outputting the extracted data packets.

20.   The switch of claim 19 wherein each packet formatter comprises a packet queuer comprised of a plurality of waiting buffers for queuing data packets and a controller configured to (1) queue data packets in the waiting buffers according to their corresponding SPPs
5   such that data packets sharing a common corresponding SPP are commonly-queued, and (2) for each waiting buffer, create a train packet therefrom by encapsulating in a train packet payload at least some of the data packets queued therein and encapsulating the SPP shared by the data packets encapsulated in the train packet payload
10   in a train packet header.

21.   The switch of claim 20 wherein each packet queuer further comprises a plurality of backlog buffers for queuing train packets, each backlog buffer corresponding to a waiting buffer, and wherein the controller is further configured to queue each train packet in a
5   backlog buffer corresponding to the waiting buffer from which that train packet was created.

22.   The switch of claim 20 wherein each packet queuer is further configured to create a train packet from at least some of the data packets queued in a waiting buffer once the data packets queued therein have an aggregate length greater than or equal to a pre-
5   selected maximum threshold value.

23.   The switch of claim 20 wherein each packet queuer is further configured to create a train packet from whatever is queued in a non-empty waiting buffer upon passage of a pre-selected time period after which that waiting buffer became non-empty.

24.   The switch of claim 20 wherein at least one packet formatter further comprises a plurality of said packet queuers and a multiplexor for multiplexing the train packets created by said packet queuers.

25.   The switch of claim 19 wherein each train packet payload comprises a plurality of payload blocks, each payload block

22928.doc

comprising a data portion and a control header portion, wherein the
data portion comprises either a plurality of data packets, a single
5   data packet, a portion of a data packet, padding, or some combination
thereof, wherein the control header comprises deformatting
information, and wherein each packet deformatter is configured to
extract data packets from the train packet payloads according to the
deformatting information within the control headers of the payload
10 blocks.

26.   The switch of claim 19 wherein each packet formatter is
configured to create train packets having variable lengths.

27.   The switch of claim 19 wherein each packet formatter is
configured to create train packets having a fixed length.

28.   A switch for routing a plurality of data packets between a
plurality of switch inputs and a plurality of switch outputs, each of
said data packets having a corresponding switch processing parameter
(SPP), said switch comprising:
5   a)   a plurality of packet formatters, each of said packet
formatters configured to (1) queue data packets according to their
corresponding SPPs such that data packets sharing a common
corresponding SPP are commonly-queued, (2) create subtrain packet
sets from the commonly-queued data packets, each subtrain packet set
10 comprising a plurality N of subtrain packets, each subtrain packet
comprising a subtrain payload and a subtrain header, wherein the
subtrain payloads of the subtrain packets in at least one subtrain
packet set encapsulate a plurality of commonly-queued data packets in
the aggregate, and wherein the subtrain header of each subtrain
15 packet in each subtrain packet set includes the SPP shared by each
data packet encapsulated in the aggregated subtrain payload of that
subtrain packet set, and (3) for each subtrain packet set, output the
subtrain packets included in that subtrain packet set in parallel;
        b)   a switch fabric for routing subtrain packet sets received
20 from the packet formatters, said switch fabric comprising a plurality
N of switch planes, each switch plane having a plurality of switch
plane inputs for receiving subtrain packets from the packet
formatters and a plurality of switch plane outputs for outputting
subtrain packets, wherein each switch plane is configured to (1)

22928.doc

25 receive a subtrain packet from each subtrain packet set, and (2)
    route each received subtrain packet to a switch plane output
    according to the SPP included in its subtrain header; and
        c)   a plurality of packet deformatters, each packet
    deformatter configured to (1) receive routed subtrain packet sets
30 from the switch fabric, and (2) extract from the received subtrain
    packet sets the data packets encapsulated therein.

    29.   The switch of claim 28 wherein each packet formatter comprises
    a packet queuer for creating train packets from commonly-queued data
    packets and a slicing unit for creating subtrain packet sets from the
    train packets created by the packet queuer, each packet queuer
5   comprising a plurality of waiting buffers for queuing data packets
    and a controller configured to (1) queue data packets in the waiting
    buffers according to their corresponding SPPs such that data packets
    sharing a common corresponding SPP are commonly-queued, and (2) for
    each waiting buffer, create a train packet therefrom by encapsulating
10 in a train packet payload at least some of the data packets queued
    therein and encapsulating the SPP shared by the data packets
    encapsulated in the train packet payload in a train packet header,
    and wherein the slicing unit is configured to, for each train packet
    created by the packet queuer, create N subtrain payloads for the N
15 subtrain packets in a subtrain packet set by slicing the payload of a
    train packet into N slices.

    30.   The switch of claim 29 wherein each packet queuer further
    comprises a plurality of backlog buffers for queuing train packets
    awaiting slicing by the slicing unit.

    31.   The switch of claim 29 wherein each packet queuer controller is
    configured to create a train packet from at least some of the data
    packets queued in a waiting buffer once the data packets queued in
    that waiting buffer have an aggregate length equal to or exceeding a
5   pre-selected maximum threshold value.

    32.   The switch of claim 29 wherein each packet queuer controller is
    configured to create a train packet from whatever is queued in a non-
    empty waiting buffer upon passage of a pre-selected amount of time
    after which that waiting buffer became non-empty.

    22928.doc

33. The switch of claim 29 wherein each packet queuer controller is configured to create train packets having a fixed length.

34. The switch of claim 29 wherein each packet queuer controller is configured to create train packets having varying lengths.

35. The switch of claim 29 wherein at least one packet formatter further comprises a plurality of said packet queuers and a multiplexor for multiplexing the train packets created by the plurality of said packet queuers upstream from the slicing unit.

36. The switch of claim 29 wherein the slicing unit of each packet formatter is further configured to, for each subtrain packet set, encapsulate slicing information within the subtrain header of each subtrain packet within a subtrain packet set, wherein the switch planes in the switch fabric are configured to be synchronous with each other, and wherein each packet deformatter comprises a packet merger configured to reassemble the train packet payloads from which each received subtrain packet set was sliced according to the slicing information encapsulated in the subtrain packet headers, and a packet restorer configured to extract each data packet from the reassembled train packet payloads.

37. The switch of claim 29 wherein the slicing unit of each packet formatter is further configured to, for each subtrain packet set, encapsulate slicing information within the subtrain header of each subtrain packet within a subtrain packet set, wherein the switch planes in the switch fabric are configured to be asynchronous with each other, and wherein each packet deformatter comprises a packet merger configured to (1) queue subtrain packets received from the switch planes, wherein the subtrain packets in the same subtrain packet set are commonly-queued, and (2) for each queued subtrain packet set, reassemble the train packet payload from which that subtrain packet set was sliced according to the slicing information encapsulated in the subtrain packet headers, and a packet restorer configured to extract each data packet from the reassembled train packet payloads.

38. A device for formatting data packets, said device comprising:

22928.doc

a)   an input for receiving a plurality of data packets, each
of said data packets having a corresponding switch processing
parameter (SPP);

5   b)   a packet queuer connected to said input, said packet
queuer comprising a plurality of waiting buffers for queuing data
packets therein and a controller configured to (1) queue each data
packet in an appropriate waiting buffer according to its SPP such
that data packets sharing a common SPP are commonly-queued, and (2)

10   create train packets from the commonly-queued data packets, each
train packet having a payload and a header, wherein the payload of at
least one train packet is comprised of a plurality of commonly-queued
data packets, and wherein the header of each train packet includes
the SPP correponding to each data packet within the payload of that

15   train packet.

39.   The device of claim 38 wherein the packet queuer is further
configured to create train packets having variable lengths.

40.   The device of claim 38 wherein the packet queuer is further
configured to create train packets having a fixed length.

41.   The device of claim 38 wherein the packet queuer is further
configured to create a train packet from the data packets queued in a
waiting buffer if the data packets queued that waiting buffer have an
aggregate length equal to or exceeding a pre-selected maximum

5   threshold value.

42.   The device of claim 38 wherein the packet queuer is further
configured to create a train packet from whatever is queued in a non-
empty waiting buffer once a pre-selected threshold amount of time has
passed since that waiting buffer became non-empty.

43.   The device of claim 38 wherein the packet queuer further
comprises a plurality of backlog buffers for queuing train packets.

44.   The device of claim 38 further comprising a plurality of said
inputs, a plurality of said packet queuers, wherein each packet
queuer is receives data packets from a different input, and a

22928.doc

multiplexor connected to the plurality of packet queuers for
multiplexing the train packets created from the packet queuers.

45.   The device of claim 38 further comprising a slicing unit for
slicing each train packet created by the controller into a set of N
subtrain packets, each subtrain packet comprising a subtrain payload
and a subtrain header, wherein each subtrain payload comprises a
portion of the train packet payload of the train packet from which
the subtrain packet set was sliced, and wherein each subtrain header
includes the SPP of the train packet header of the train packet from
which the subtrain packet set was sliced.

46.   The device of claim 45 wherein the slicing unit is configured
to encapsulate slicing information for the train packet within each
subtrain header.

47.   A device for deformatting train packets, each train packet
comprising a payload portion and a header portion, the payload
portion having a plurality of data packets sharing a common
corresponding switch processing parameter (SPP) encapsulated therein,
the header portion including boundary information for the data
packets encapsulated in the payload portion, said device comprising:
        an input for receiving train packets; and
        a packet restorer connected to said input, wherein said packet
restorer is configured to extract from each received train packet the
data packets encapsulated therein according to the boundary
information included in the header of the train packet.

48.   A device for deformatting sets of N subtrain packets, each
subtrain packet having a subtrain payload and a subtrain header, each
subtrain payload comprising a portion of a train packet payload,
wherein each subtrain packet set has an aggregate subtrain payload
comprising an entire train packet payload, wherein at least one train
packet payload comprises a plurality of data packets sharing a common
switch processing parameter (SPP), and wherein each subtrain header
includes slicing information for the subtrain packet set and boundary
information for the data packets encapsulated within the train packet
payload, said device comprising:

22928.doc

a) a plurality N of inputs for receiving subtrain packets in parallel;

b) a packet merger for reassembling the train packet payload from the aggregate subtrain payload of each set of received subtrain packets according to the slicing information included within the subtrain header of each subtrain packet in the subtrain packet set; and

c) a packet restorer connected to said packet merger, wherein said packet restorer is configured to extract from each recassembled train packet the data packets encapsulated therein according to the boundary information included in the subtrain headers.

49. A multi-path switching system for routing data packets, said multi-path switch comprising a plurality of paths through which data packets are routed, wherein each path is associated with a distribution class and configured to route data packets corresponding to said distribution class, and wherein at least one of the paths is comprised of a switch according to claim 19.

50. The multi-path switching system of claim 49 wherein at least one of the paths is comprised of a switch according to claim 28, wherein the path that is comprised of the switch according to claim 28 is a different path than the path that is comprised of the switch according to claim 19.

51. A multi-path switching system for routing data packets, said multi-path switching system comprising a plurality of paths through which data packets are routed, wherein each path is associated with a distribution class and configured to route data packets corresponding to said distribution class, and wherein at least one of the paths is comprised of a switch according to claim 28.

52. A multi-path switching system for routing data packets, each data packet having a corresponding switch processing parameter (SPP), said multi-path switching system comprising:

a plurality of packet queuers for creating train packets from data packets sharing a common SPP, each train packet having a payload and a header, wherein the payload of at least one train packet

22928.doc

comprises a plurality of data packets sharing a common SPP, and
wherein header of each train packet includes the SPP corresponding to
each data packet comprising the payload of that train packet;

10   a plurality of traffic distributors for receiving train packets
from the packet queuers and distributing each received train packet
to at least one of a plurality of paths according to a predetermined
set of distribution criteria;

    each path comprising a switch fabric for routing train packets

15 according to their SPPs; and

    a plurality of packet deformatters for receiving train packets
routed by the switch fabrics and deformatting each routed train
packet by extracting data packets from each train packet payload.

53.   A multi-path switching system for routing data packets, each
data packet having a corresponding switch processing parameter (SPP),
said multi-path switching system comprising:

    a plurality of packet queuers for creating train packets from

5 data packets sharing a common SPP, each train packet having a payload
and a header, wherein the payload of at least one train packet
comprises a plurality of data packets sharing a common SPP, and
wherein header of each train packet includes the SPP corresponding to
each data packet comprising the payload of that train packet;

10   a plurality of traffic distributors for receiving train packets
from the packet queuers and distributing each received train packet
to at least one of a plurality of paths according to a predetermined
set of distribution criteria;

    wherein at least one of said paths comprises a slicing unit for

15 receiving train packets from the traffic distributors and slicing
each received train packet into a set of N subtrain packets, and a
switch fabric having a plurality N of switch planes, each switch
plane for routing a different subtrain packet within a subtrain
packet set; and

20   wherein said switch fabric within said at least one path
comprising said slicing unit is linked to a plurality of packet
deformatters for receiving subtrain packets, reassembling the train
packets from which the subtrain packets were sliced, and extracting
data packets from the reassembled train packets.

22928.doc

54.   A device for routing data packets, each data packet having a
corresponding switch processing parameter (SPP), said device
comprising:

    a)   means for receiving a plurality of data packets;

5   b)   means for queuing said received data packets into a
plurality of data packet queues according to their corresponding SPPs
such that data packets sharing a common corresponding SPP are
commonly-queued;

    c)   means for creating train packets from commonly-queued
10 data packets, each train packet comprising a payload and a header,
wherein the creating means is configured to (1) encapsultate a
plurality of commonly-queued data packets within the payload of at
least one train packet and (2) encapsulate the SPP corresponding to
each data packet encapsulated in the train packet payload within the
15 train packet header, wherein said creating means is in circuit with
said queuing means; and

    d)   means for routing each train packet as specified by its
encapsulated SPP, wherein said routing means is in circuit with said
creating means.

55.   A device for routing data packets, each data packet having a
corresponding switch processing parameter (SPP), said device
comprising:

    a)   means for receiving a plurality of data packets;

5   b)   means for queuing said received data packets into a
plurality of data packet queues according to their corresponding SPPs
such that data packets sharing a common corresponding SPP are queued
within the same data packet queue;

    c)   means for creating train packets from commonly-queued
10 data packets, each train packet comprising a payload and a header,
wherein the train packet creating means is configured to (1)
encapsulate a plurality of commonly-queued data packets within the
payload of at least one train packet and (2) encapsulate the common
SPP corresponding to each data packet encapsulated in the train
15 packet payload within the train packet header, wherein said train
packet creating means is in circuit with said queuing means;

    d)   means for creating a set of N subtrain packets from each
train packet created by the train packet creating means, each
subtrain packet comprising a subtrain payload and a subtrain header,

22928.doc

20   wherein said subtrain packet set creating means is configured to (1) create subtrain payloads by slicing each train packet payload into N slices, wherein each slice comprises a subtrain payload, and (2) encapsulate within each subtrain header the SPP encapsulated within the train packet header of the train packet from which the set of

25   subtrain packets was sliced;

     e)   means for routing each subtrain packet within a set of subtrain packets through a different switch plane within the routing means as specified by its encapsulated SPP.

   56.   A switch for routing data packets between a plurality of switch inputs and a plurality of switch outputs, said switch comprising:

     a)   a plurality of first level SPP mappers for determining a corresponding first level SPP for each data packet and attaching said

5   determined first level SPP thereto;

     b)   a plurality of first level packet formatters for queuing together data packets sharing a common corresponding first level SPP, creating first level train packets from the commonly-queued data packets, wherein each first level train packet comprises a payload

10 and a header, wherein the payload of at least one first level train packet includes a plurality of commonly-queued data packets, and wherein the header of each first level train packet includes the common first level SPP corresponding to each data packet included in the payload of that first level train packet;

15   c)   a plurality of second level SPP mappers for determining a corresponding second level SPP for each first level train packet and attaching said determined second level SPP thereto;

     d)   a plurality of second level packet formatters for queuing together first level train packets sharing a common corresponding

20 second level SPP, creating second level train packets from the commonly-queued data packets, wherein each second level train packet comprises a payload and a header, wherein the payload of at least one second level train packet includes a plurality of commonly-queued first level train packets, and wherein the header of each second

25 level train packet includes the common second level SPP corresponding to each first level train packet included in the payload of that second level train packet;

e)   a plurality of multiplexors, each multiplexor linking a plurality of first level packet formatters to a second level packet
30 formatter;

f)   a switch fabric having a plurality of switch fabric inputs for receiving second level train packets from the second level packet formatters and a plurality of switch fabric outputs for outputting routed second level train packets, wherein the switch
35 fabric is configured to route each received second level train packet to a switch fabric output according to the second level SPP included in the header of each second level train packet;

g)   a plurality of second level packet deformatters for receiving routed second level train packets outputted from the switch
40 fabric, extracting first level train packets from the payloads of the received routed second level train packets, and outputting the extracted first level train packets;

h)   a plurality of first level packet deformatters for receiving extracted first level train packets outputted from the
45 second level packet deformatters, extracting data packets from the payloads of the received extracted first level train packets, and outputting the extracted data packets; and

i)   a plurality of demultiplexors, each demultiplexor linking a second level packet deformatter with a plurality of first level
50 packet deformatters.

57.   A switch for routing data packets between a plurality of switch inputs and a plurality of switch outputs, said switch comprising:

a)   a plurality of first level SPP mappers for determining a corresponding first level SPP for each data packet and attaching said
5 determined first level SPP thereto;

b)   a plurality of first level packet formatters for queuing together data packets sharing a common corresponding first level SPP, creating first level train packets from the commonly-queued data packets, wherein each first level train packet comprises a payload
10 and a header, wherein the payload of at least one first level train packet includes a plurality of commonly-queued data packets, and wherein the header of each first level train packet includes the common first level SPP corresponding to each data packet included in the payload of that first level train packet;

22928.doc

15   c)   a plurality of second level SPP mappers for determining a
corresponding second level SPP for each first level train packet and
attaching said determined second level SPP thereto;

         d)   a plurality of second level packet formatters, each of
said second level packet formatters configured to (1) queue first
20   level train packets according to their corresponding second level
SPPs such that first level train packets sharing a common
corresponding second level SPP are commonly-queued, (2) create
subtrain packet sets from the commonly-queued first level train
packets, each subtrain packet set comprising a plurality N of
25   subtrain packets, each subtrain packet comprising a subtrain payload
and a subtrain header, wherein the subtrain payloads of the subtrain
packets in at least one subtrain packet set encapsulate a plurality
of commonly-queued first level train packets in the aggregate, and
wherein the subtrain header of each subtrain packet in each subtrain
30   packet set includes the second level SPP shared by each first level
train packet encapsulated in the aggregated subtrain payload of that
subtrain packet set, and (3) for each subtrain packet set, outputting
the subtrain packets included in that subtrain packet set in
parallel;

35   e)   a plurality of multiplexors, each multiplexor linking a
plurality of first level packet formatters to a second level packet
formatter;

         f)   a switch fabric for routing subtrain packet sets received
from the second level packet formatters, said switch fabric
40   comprising a plurality N of switch planes, each switch plane having a
plurality of switch plane inputs for receiving subtrain packets from
the second level packet formatters and a plurality of switch plane
outputs for outputting subtrain packets, wherein each switch plane is
configured to (1) receive a subtrain packet from each subtrain packet
45   set, and (2) route each received subtrain packet to a switch plane
output according to the second level SPP included in its subtrain
header; and

         g)   a plurality of second level packet deformatters, each
second level packet deformatter configured to (1) receive routed
50   subtrain packet sets from the switch fabric, (2) extract from the
received subtrain packet sets the first level train packets
encapsulated therein, and (3) output each extracted first level train
packet;

22928.doc

h)   a plurality of first level packet deformatters for
55   receiving extracted first level train packets outputted from the
second level packet deformatters, extracting data packets from the
payloads of the received extracted first level train packets, and
outputting the extracted data packets; and

i)   a plurality of demultiplexors, each demultiplexor linking
60   a second level packet deformatter with a plurality of first level
packet deformatters.